

REMARKS - General

Applicant's claims

Applicant has rewritten the claims above to address Examiner's comments and emphasize the unique feature of the Applicant's method of controlling the digital signature process: the use of a protected cover document to control access to subdocuments to with a combination of all of the steps of (claims 1 and 11):

1. Creation of a cover document protected from user modification.
2. Creation through the cover document of one or more subdocuments with access (read and write) controlled through the cover document for subsequent approval and editing of the subdocuments. Subdocuments have no limitation requiring any particular relationship between the subdocuments.
3. Control through the cover document of the generation of digital signatures referencing the subdocuments. Claims 1 and 11 have been amended to reflect the storage in the cover document of the digital signature information to emphasize that the use of the cover document differs from the customary embedding of the digital signature in the approved document.
4. A means for the editing of the subdocuments controlled by the cover document which also has knowledge of approvals.

This combination of steps is different from the simple embedding of a digital signature in a document as described by Slater et al which has no reference to controlling access to approval documents. It should be emphasized that there is a difference between an original document that is to be authenticated and approved and a subdocument. Approval of a preexisting document is inconsistent with Applicant's requirement that subdocument creation be controlled by the cover document. See "controlled creation, modification, signature generation and signature verification of one or more subdocuments "(claim 1); " the creation, display and

editing of said subdocuments" (claim 11). An original document can be copied through the cover document to create a subdocument but the subdocument thus created is a copy of the original, not the original document. Applicant has a limitation that the actions of signing, verification, editing, etc. are only applied to the subdocument in Applicant's methodology. There is no provision in Applicant's methodology for the approval or editing of the cover document. For example, insertion of a template would allow modification of that template copy without affecting the template itself, the template can be independently changed by other applications, and the cover document can prohibit any other program from reading or writing to the subdocument template copy. Applicant teaches a digital signature relates only to the subdocument copy and does not affect or relate to any original document or to the cover document (claims 1 and 11).

These limitations to the method for organizing a hierarchy of cover document and subdocuments allow the following unique functionalities that are not available in the other references cited in the OA:

1. The automatic protection of the cover document does not allow a user to modify subdocument access rights. This is valuable to insure the integrity of cover document forms.
2. Controlling through the cover document access to the subdocuments allows the creator of the cover document to prevent other applications or users from reading or writing to the subdocuments. This avoids Petrogiannis' aborting of his applications if any modification is detected.
3. Controlled digital signature generation and verification of subdocuments. This is valuable for allowing the automatic removal of digital signatures from modified subdocuments so there are no invalid digital signatures.
4. Allowing controlled editing of subdocuments. This differentiates Applicant's work from the simple detection of any modification to a document in Petrogiannis.

5. Coordination of this editing with digital signature generation to conditionally prevent editing or invalidating the digital signature. An example of the utility of this would be a case where only approvers with a higher level authority would be given permission to modify and invalidate lower level approvals.

With the limitation of controlling the access to a subdocument the cover document "owns" the subdocument and can prevent any read or write by outside applications to prevent multiple copies in various phases of approval. In the Coast Guard application the control of the digital signatures in the cover document allowed a hierarchy of approval rankings so that a lower level of authorization cannot invalidate a document signed by one with a higher approval level, while one with a higher approval level can invalidate the signature of one with a lower level.

Prior art cited in O.A.

Petrogiannis' 632, Petrogiannis' 660, Dryer 666, Slater 489, Messing 805 and Spitz 807 do not use a separate document to control access to the signed document, do not control editing and do not allow the coordination of the editing and the digital signature as Applicant teaches. The normal way of incorporation digital signatures is in a signature block in the document as is described in Slater et al. Slater et al, Messing and Spitz represent the type of signature-generation programs described in section 29 of Applicant's patent application and which would be used in newly cited Dryer666. Dryer666 nowhere describes the methodology and limitations of embedding within a protected cover document restricted access to subdocuments to control the editing and approval of the subdocuments. It includes a generalized discussion of the normal use of digital signatures as is common in industry. The only unique feature in Dryer 666 relating to digital signatures is the management of a PKI in claims 13 and 14 which is not a feature of Applicant's patent application. Nowhere in Dryer666 is there a mention of a cover document, subdocuments or a method of restricting access to documents to be digitally signed. Applicant does not claim that the embedding of a digital signature, or even an approval, in a document is a patentable feature of Applicant's patent application. Rather the combination of

creating a protected cover document to control access to a subdocument to be approved and using this controlled access to control the modification and approval of the subdocument (the steps of claims 1 and 11), which steps are not present in Petrogiannis'660 and Dryer'666 either individually or in combination. The modification of claims 1 and 11 now specify that the digital signature information is contained in the cover document and not in the signed subdocuments, further emphasizing this difference.

The previous OA claims Petrogiannis' 632 teaches a method of controlling the digital signature process by:

1. Allowing the controlled creation of multiple subdocuments;
2. Allowing the controlled modification of multiple subdocuments;
3. Allowing the controlled signature generation and signature verification of multiple subdocuments.

Applicant's patent application teaches all these features in combination in Applicant's limitations in claims 1 and 11. None of these features are taught by Petrogiannis'632. While Petrogiannis'632 has reference to multiple copies of the single master document it rejects the concept of multiple unrelated documents as shown by referring to a single master document ("The master document is" (Abstract). "...insuring that a translated document has not been altered from the original, master document." (Col 3 Line 6)). The master document is not the equivalent of the cover document in that in Petrogiannis the master document is created in another system and is the document to be verified (Col 2 Line 50) while in Applicant's patent application the cover document is created in the described system with unique properties (protected, no verification of the cover document) as a holding document controlling access to documents (the subdocuments) which are to be verified (claims 1 and 11). While a subdocument may be a separate copy of a preexisting master document, Applicant teaches the creation of the subdocument through the cover document while Petrogiannis does not address

the creation of a master document. Applicant teaches a method for the creation, editing and digital signature of one or more subdocuments while Petrogiannis'632 nowhere teaches the cover document for the creation, editing and signature generation of his single master document. Petrogiannis'632 does not teach a method for controlling, and possibly preventing, modification of multiple subdocuments but rather this teaches a method of detecting and rejecting any modification of the single master document ("...the method of the patent provides for an alert to the user at step 4 that the document has been altered and the reproduction process will be terminated at step 5" (Col 3 Line 17)). Petrogiannis'632 thus recognizes the problem that Applicant is addressing through controlled access (claims 1 and 11) but offers no method of addressing the problem other than aborting the process.

Petrogiannis'632 characterizes a document through the use of a Data Authentication Code (DAC), which is "a code assigned to a particular document that uniquely describes the contents of that document" (Petrogiannis' 632 Col 2, line 65) and therefore is document specific with no reference to the identity of a particular signer or a signer's private key. "Digital signatures are used to detect unauthorized modifications to data and to authenticate the identity of the signatory" (<http://csrc.nist.gov/publications/fips/fips186-2/fips186-2-change1.pdf>). While the DAC authenticates the document it does not implement the public and private key linkage to the signer required by the federal Digital Signature Standard (DSS) described in the NIST document just referenced and well-known in the industry at the time of the filing of Petrogiannis'632. Petrogiannis'632 DAC is a method of authentication and is not a digital signature as it contains no reference anywhere to a "digital signature" or to the required key linkage mandated in the DSS as defined by NIST to qualify as a digital signature under the provisions of Section 5131 of the Information Technology Management Reform Act of 1996 (Public Law 104-106), and the Computer Security Act of 1987 (Public Law 100-235). Similarly Petrogiannis'632 nowhere teaches a means for signature verification and linkage to a particular signer. Petrogiannis'632 creates "verifiable reproductions" (Col 2 Line 39) but does not teach a method for the verification as does Applicant (Sections 26-33). Thus, Petrogiannis'632 teaches

a verification method for a single document and externally edited reproduction of the single document, but it fails to teach the control of digital signatures and the controlled editing of the document through controlled access by means of a protected cover document, which are specific requirements and limitations of the Applicant's patent application.

While Petrogiannis'660 discusses the use of a master document as a holder for approval documents, his Figure 5 illustrates the fundamental difference between the master document and Applicant's cover document. Applicant teaches first creating a cover document to control the subsequent creation, editing and digital signature approval of subdocuments (claims 1 and 11). Petrogiannis'660 Figure 5 shows his generation and approval of documents by some external means, subsequently followed by the merging of these documents with their approvals into the master document. "Each approved document can be subsequently incorporated into a master document" (Col 9 Line 20). Petrogiannis'660 thus does not teach Applicant's use of the cover document to control the access to the electronic documents to be approved in order to control the editing and digital signature generation. This Petrogiannis'660 also utilizes a DAC which is undefined in this patent but which is obvious in Col 2 Line 65 contains no linkage to a signer's identity but rather uniquely characterizes the document itself. The use of the DAC in both Petrogiannis'632 and Petrogiannis'660 cannot be considered to be a precursor to digital signatures as they were both filed in 1999, years after the general acceptance of digital signatures. The first federal DSS standard was presented in 1991 (<http://www-swiss.ai.mit.edu/6805/student-papers/fall97-papers/fillingham-sig.html>). Petrogiannis'660 therefore must have had knowledge of digital signatures and the failure to compare the DAC with a digital signature must imply that they felt the DAC was different. The discussion of a DAC fails to address the essential characteristic of a digital signature as defined by the NIST standard DSS referenced earlier (<http://csrc.nist.gov/publications/fips/fips186-2/fips186-2-change1.pdf>). Petrogiannis'660 rejects controlled access through a cover document to the approval document to prevent modifications after approval. "Should the DACs not match, this would indicate that the data has been altered without proper approval and corrective action would be necessary"

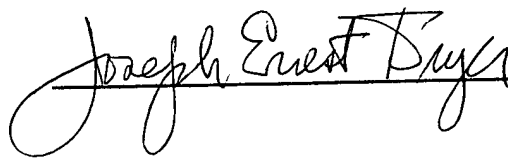
(Col 3 Line 35). This acknowledgement that modifications are a problem without addressing the solution emphasized the advantages of Applicant's methodology. The failure of verification requiring corrective action is avoidable with controlled access through the cover document as required by Applicant's claims 1 and 11 since editing of the subdocument can be prevented or approval removed in case editing of a section is allowed.

Due to the infinite recursion required, it is physically impossible to embed into a cover document a subdocument which is identical to the cover document (thus embedding a document which includes a copy of the cover document, which embedded copy must include copy of the cover document, which must include a copy of ...). To emphasize this limitation, this specific restriction has been added to claims 1 and 11. The subdocuments can be multiple copies of another document inserted through the cover document since the Applicant's methodology teaches that the insertion of these copies through the cover document provides controlled access to such new subdocument copies in order to allow controlled modification and controlled signature generation and verification (claim 1 and claim 11) while ignoring any modification to the original from which the inserted copy was made. As Petrogiannis'632 and Petrogiannis'660 deal with unmodified copies of one or more master document in a manner not incorporating a cover document with the ability to coordinate and control editing and approval, the insertion of multiple copies in the cover document of Applicant's methodology for subsequent editing and approval should represent no 102 conflict. There is no possible usefulness of storing multiple identical copies of subdocuments without the ability to edit, an ability which Petrogiannis is designed to reject as described previously. The value of this ability to edit multiple versions of a document and independently digitally sign each modification has use, for example, by allowing review of alternative draft revisions of an original document. The ability to control the editing further allows the insertion of comments for review without invalidating the digital signature process as described in claims 15, 16 and 17.

The O.A. comments as to the bounds of an independent claim 15 (renumbered) are recognized, and this claim has been modified to be dependent on claims 1 and 11 to inherit their limitations.

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2008 June 24

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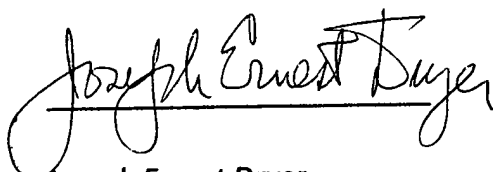
CONCLUSION

For all the above reasons, applicant submits that the specification and claims are now in proper form. Therefore they submit that this application is now in condition for allowance, which action they respectfully solicit.

Conditional Request for Constructive Assistance

Applicant has amended the claims of this application so that they are proper. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



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